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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,908	09/30/2003	Evon Llewellyn Crooks	030627/267420	9006

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EXAMINER

LAZORCIK, JASON L

ART UNIT PAPER NUMBER

1731

DATE MAILED: 10/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/674,908

Applicant(s)

CROOKS ET AL.

Examiner

Jason L. Lazorcik

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, and 3-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

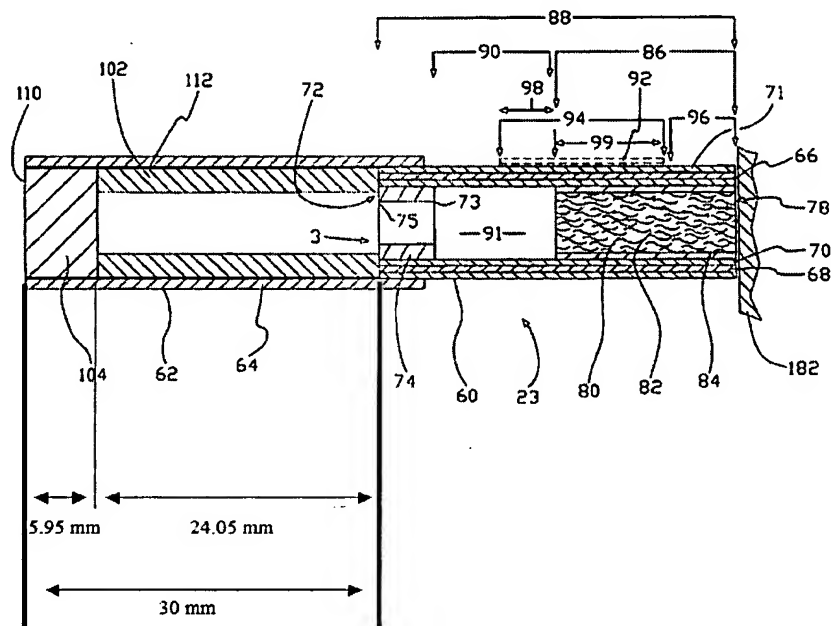
The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 3-15, and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Counts (5,629,525) in view of Zhuang (US 6,814,786 B1) and Yang (US 2004/0226569 A1) and in further view of Keith et. al. (<http://tobaccodocuments.org/pm/2501260096-0130.html>).

Counts teaches (see annotated figure below) a multi-segment filter comprising a mouthpiece filter plug (**104**), tubular free flow filter element (**102**), and tubular free flow filter (**72**). Counts continues by disclosing several dimensions including (Column 8, Lines 38-40) that the combined length of the mouthpiece filter (**104**) and free-flow filter (**102**) is preferably 30mm and that the tipping paper (**62**) extends approximately 6 mm over the tobacco rod (**60**). It is therefore obvious from the immediate reference Figure

4a that the filter elements (104) and (102) have length dimensions of approximately 6mm and approximately 24mm, respectively. Further, since the tubular free flow filter (72) is longer than the portion of the tipping paper which extends over the tobacco rod, the length of said filter is at least 6mm but less than 12mm as evidenced from the figure.



While Counts does not disclose the incorporation of an absorbent or hollow section, ***both Zhuang and Yang disclose modifications with specific reference to the Counts multi-segment filter structure described above.***

Zhuang teaches a filter for incorporation into a smoking article which includes at least two monolithic sorbent segments and a mixing segment disposed between the sorbent segments. The following excerpt Figure 1 from the immediate reference depicts a filter (30) comprising sorbent segments (32) and a hollow mixing region (37) defined by the sorbent segments. Zhuang further teaches (Column 7, Lines 4-6) that the length

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of the sorbent segments L is preferably less than about 5mm and more preferably from about 0.5mm to about 2mm.

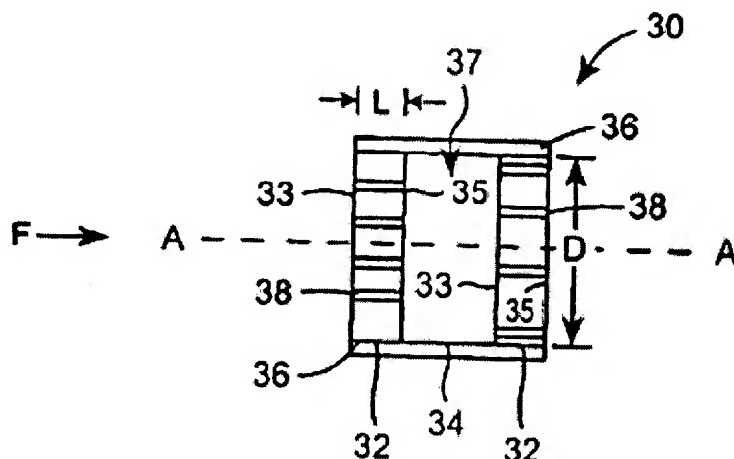


FIG. 1

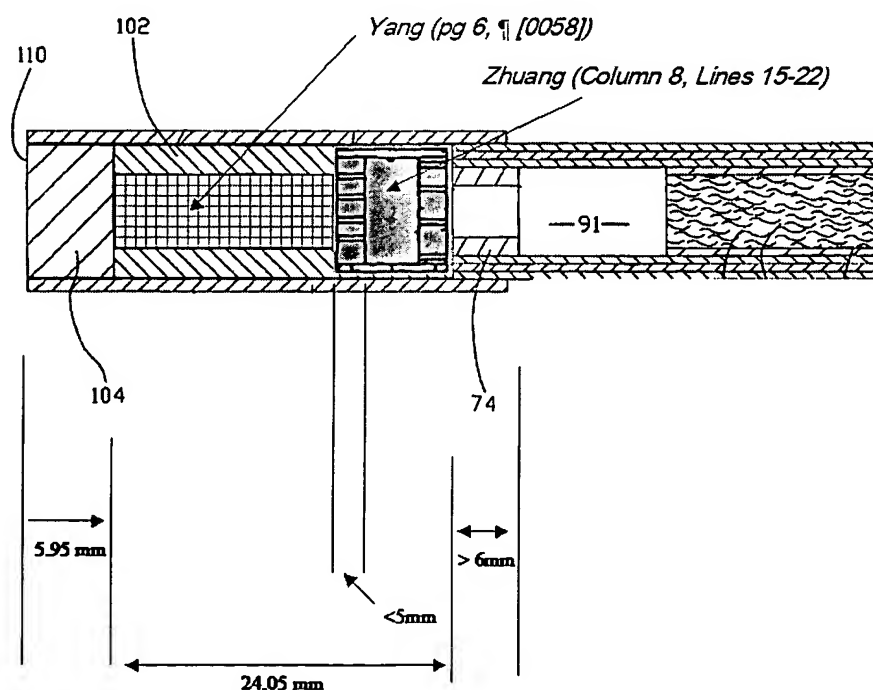
Referring specifically to the Counts multi-segment filter (see immediate reference figure 15), Zhuang teaches (Column 14, Lines 16-21) that the "filter (30) can be...substituted **as part of**, or in place of the tubular free-flow filter element (102)." Zhuang teaches (Column 4, Lines 1-3) the mixing region (37) of filter (30) promotes the mixing of gas that has passed through one monolithic sorbent segment before entering an adjacent sorbent segment. Further, this mixing region can increase gas recombination to enhance the filtration selectivity.

Yang teaches the preparation of a flavored carbon useful as a filtering material in a cigarette in order to impart desired taste while removing one or more components from mainstream smoke. Specifically, the activated carbon comprises granulated carbon (pg3, ¶ [0031]) having particles in ranging in size from about 6 mesh to about 70 mesh. Again with specific reference to the Count multi-segment filter, Yang teaches (Pg

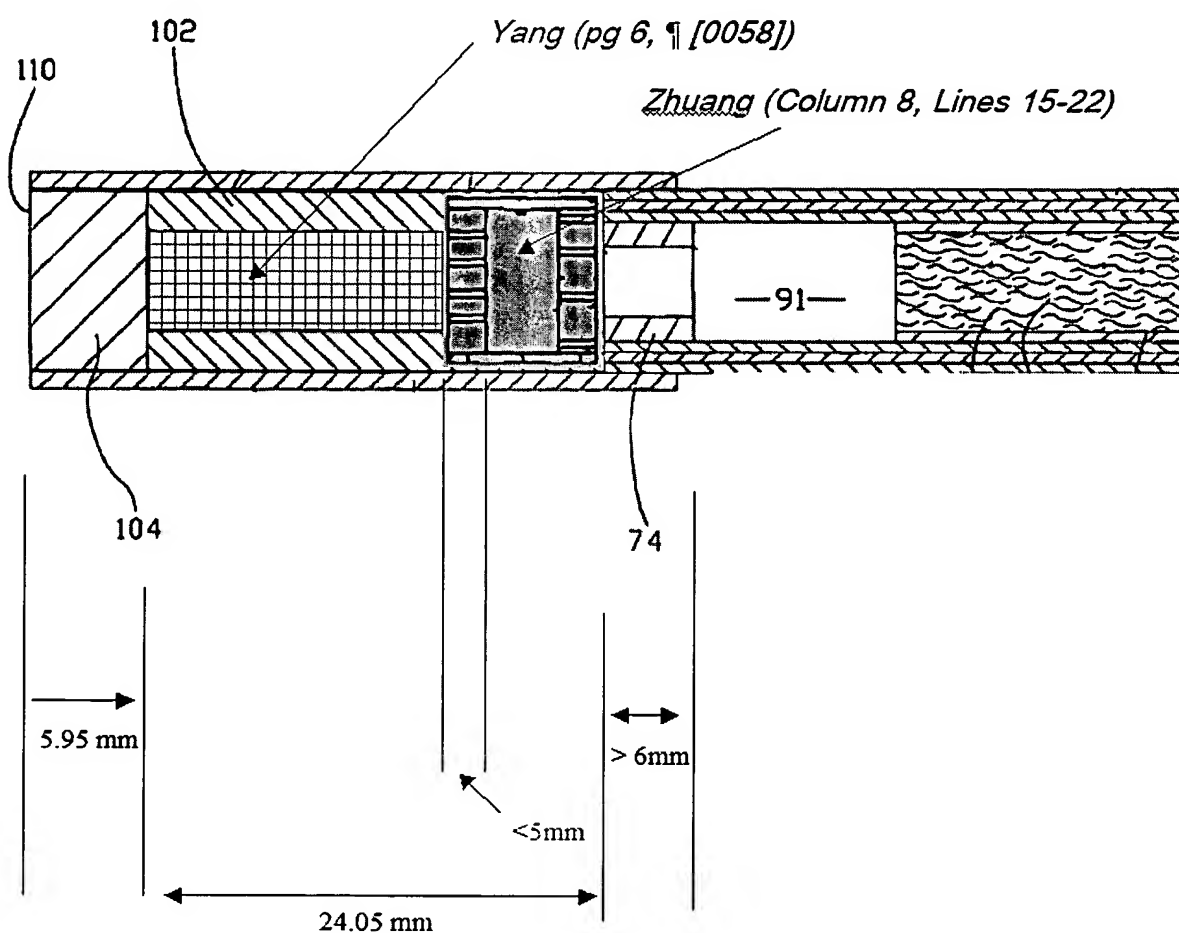
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6, ¶ [0058]) that the flavored carbon particles can be incorporated in various ways such as by being loaded onto paper or other substrate material which is ***fitted into the passageway of the tubular free-flow filter element (102).***"

The composite structure displaying the Counts filter modified as taught by Zhuang and Yang is presented below and is hereafter referred to as the Modified Counts Filter (MCF). The Zhuang filter (30) has been superimposed over a portion of the tubular filter element (102) to graphically exemplify its substitution as a part of the tubular filter element in accord with the Zhuang teachings (Column 14, Lines 16-21). In light of the prior art as presented above, it would have been obvious to one of ordinary skill in the art ***to substitute a portion of the free flow filter element (102) with filter (30)*** as taught by Zhuang in order to increase the filtering selectivity of the multi-segment filter. Further, it would have been obvious to one of ordinary skill in the art to



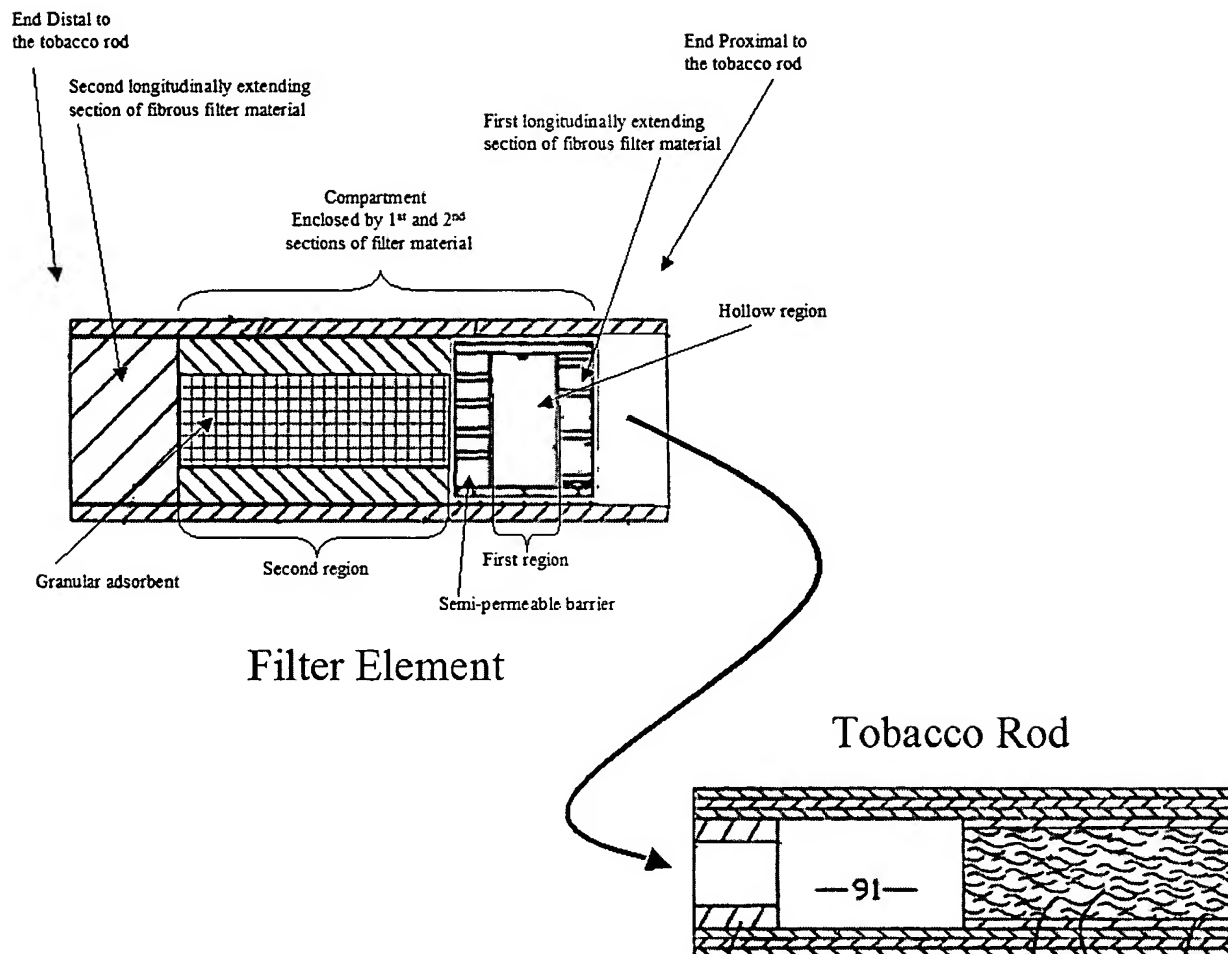
additional modify the Counts filter by ***filling the remaining portion of the free-flow filter element (102) with flavored activated carbon particles*** as taught by Yang in order to selectively remove one or more components from and add flavor to the mainstream smoke.



In order to facilitate the examination of the immediate claims, the above cigarette depicted comprising the MCF or “a filter element” has been displayed below as separate or disconnected from the tobacco rod.

Regarding Claims 1 and 20, the MCF comprises a first longitudinally extending section of filter material (Sub-element **(32)** of filter **(30)** proximal to the tobacco rod) positioned at the end of the filter element proximal to the tobacco rod and a second longitudinally extending section of filter material (Counts mouthpiece filter plug **(104)**) positioned at the end of the filter element distal from the tobacco rod. The latter filter element is spaced apart from the first section of filter material and the two sections of filter material define a compartment there between. It is clear from the image below that each section of filter material encloses or its respective end of the compartment, or as the applicant argues, it “extends across the entire cross-sectional area of a compartment formed in a cigarette filter”. A semi-permeable barrier (Sub-element **(32)** of filter **(30)** proximal to the mouth piece) of filter material divides the compartment into a first region adjacent to the first section of filter material and a second region adjacent to the second section of filter material. In accord with the teachings of Yang, an adsorbent material or granular adsorbent material is contained within the second region of the compartment while the first region defined by the volume between the first longitudinally extending section of filter material and the semi-permeable barrier (Sub-elements **(32)** of filter **(30)**) remains hollow.

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Neither Counts nor Zhuang explicitly teach that a “fibrous tow” material is used as the material of construction for the first or second longitudinally extending section of fibrous material as set forth in Claims 1 and 20. However, Zhuang does indicate that the filter element (30) comprises a sorbent which includes at least two sorbent segments, and at least one mixing region between two adjacent sorbent segments. The sorbent can be chosen from various porous materials that are capable of removing gas-phase constituents from gas flows. In a preferred embodiment the sorbent comprises activated carbon. “ (Column 3, Lines 55-64)

To this end, Keith et. al. teaches generally that “a filter is essentially a subtractive device” (pg1, ¶2) and that “the removal of vapors by chemical and physical sorption on the filtering material is also an important component of the filtration process” (Pg1, ¶4). Keith continues by asserting that “...most current filters are made from one or more of three materials, these being **cellulose acetate fibers**, cellulose fibers and **granular activated carbon**. Of these materials, **cellulose acetate in the form of a tow** or bundle of continuous filaments is by far the most common filtering agent. In this country, 91% of all cigarette filters produced were of the acetate type, 5% were of dual construction with an acetate tow segment combined with a cellulose, carbon, or mouthpiece segment, 3% were of tow or three unit construction utilizing acetate and carbon alone or in combination in the various segments, and 1% contained cellulose or cellulose plus carbon as components” (Pg2, ¶2)

Given the widespread utilization of cellular acetate tow and activated carbon as constituents in cigarette filters, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the MCF filter to utilize these materials of construction. Specifically, since fibrous tow is BY FAR THE MOST COMMON FILTERING AGENT it would have been obvious to fabricate either of the longitudinally extending sections of fibrous material or the semi-permeable barrier out of cellulose acetate tow or “a fibrous tow material” either alone or in combination with granular activated carbon.

Claim 3 is rendered obvious in light of the rejection of Claim 1 under 35 USC 103(a) and wherein the cellulose acetate tow material described in the Keith et. al.

reference is held to be functionally equivalent to the claimed plasticized cellulose acetate tow material.

With reference to the annotated dimensions in the MCF figure above, Claims 4 through 13 are rendered obvious.

Specifically regarding Claim 4, the overall length of the filter element MCF [(104), (102), (30), and (74)] is approximately 36mm which is intermediate between the claimed overall filter length of about 15 mm and about 65mm.

Regarding Claim 5, the overall length of the filter element MCF [(104), (102), (30), and (74)] is approximately 36mm which is intermediate between the claimed overall filter length of about 15 mm and about 50 mm.

Regarding Claim 6, the length of the second (104) and first (72) sections of filter material is approximately 6mm and approximately 6 to 12mm, respectively, which is intermediate between the claimed length of said sections of about 5 mm and about 25 mm.

Similarly with respect to Claim 7, the length of the second (104) and first (72) sections of filter material is approximately 6mm and approximately 6 to 12mm, respectively, which is intermediate between the claimed length of said sections of about 5 mm and about 15 mm.

Regarding Claims 8 and 9, it is well known that pressure drop increases along a backed bed in accord with increasing bed length. It would be obvious to one of ordinary skill in the art to optimize the length of the adsorbent-containing region (102) in

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order to optimize the resulting pressure drop during a draw in order to provide the desired resistance to draw.

Regarding Claim 10, the length of the compartment defined by (102) and (30) is approximately 24 mm which is intermediate between the claimed compartment length of about 10 mm and about 50 mm.

Similarly regarding Claim 11, the length of the compartment defined by (102) and (30) is approximately 24 mm which is intermediate between the claimed compartment length of about 10 mm and about 30 mm.

With respect to Claim 12, the length of the semi-permeable barrier defined by length L above is given as preferably less than about 5mm and more preferably from about 0.5mm to about 2 mm which reads directly on the claimed barrier length of between about 1 mm and about 10 mm.

Regarding Claim 13, the length of the semi-permeable barrier defined by length L above is given as preferably less than about 5mm and more preferably from about 0.5mm to about 2 mm which reads directly on the claimed barrier length of between about 1 mm and about 5 mm.

Regarding claim 14, the chamber (102) of the MCF incorporates granulated, activated carbon with a particle size in the range 6 to 70 mesh of which obviously reads on the present claim as selecting one adsorbent from among the cited acceptable group of adsorbents which includes activated carbon.

Claim 15 is clearly anticipated in light of the Claim 14 rejection laid forth above where the adsorbent is activated carbon.

Claim 17 is clearly anticipated in light of the Claim 14 rejection laid forth above where the adsorbent is granular in form.

Claim 18 is clearly anticipated in light of the Claim 14 rejection laid forth above where the adsorbent has a particle size in the range of about 8x16 mesh to about 30x70 mesh.

Claim 19 is rejected as obvious in light of the rejection of Claim 1 under 35 USC 103(a).

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Counts (5,629,525) in view of Zhuang (US 6,814,786 B1) and Yang (US 2004/0226569 A1) and Keith et. al. as applied to the rejection of claim 15 above and in further view of Degel 1990. Yang teaches that the activated carbon utilized in the disclosed invention preferably has a specific surface area of "at least 100m²/g, preferably at least 250 m²/g and more preferably at least 500 m²/g, e.g. 1000 to 2000m²/g" (Pg 2, ¶[0028]. Yang does not teach that the activated carbon has an activity of about 60 to about 150 Carbon Tetrachloride Activity. Degel however asserts that the pore volume distribution (and therefore specific surface area) is an important variable that affects carbon performance. Further, Degel (see table) displays a clear positive relationship between the surface area of activated carbon and the Carbon Tetrachloride Activity of said activated carbon. It would have been obvious to one of ordinary skill in the art to optimize the surface area and thus the Carbon Tetrachloride Activity of the activated carbon incorporated in a cigarette filter to optimize the filtering performance of said filter.

Response to Arguments

Applicant's arguments with respect to the rejection under 35 USC 102(b) of Claims 1 and 3-20 as anticipated by Pera (US 2002/0148478) been considered but are moot in view of the new ground(s) of rejection.

Similarly, applicant's arguments with respect to the rejection under USC 35 103(a) of Claims 1, 4-18, and 20 as obvious over Counts (US 5,629,525) in view of Zhuang (US 6,814,786) and Yang (US 2004/02265692) have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason L. Lazorcik whose telephone number is (571) 272-2217. The examiner can normally be reached on Monday through Friday 8:30 am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JLL


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